UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,768	09/23/2005	Wolfgang Glocker	112740-1060	5165

29177 7590 03/17/2008

BELL, BOYD & LLOYD, LLP
P.O. BOX 1135
CHICAGO, IL 60690

EXAMINER	
KARACSONY, ROBERT	
ART UNIT	PAPER NUMBER
2821	

MAIL DATE	DELIVERY MODE
03/17/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/527,768	GLOCKER ET AL.	
	Examiner	Art Unit	
	ROBERT KARACSONY	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 December 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *35-67 and 69* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *35-67 and 69* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 31, 2007 has been entered.

Claim Objections

2. Claims 35 and 69 are objected to because of the following informalities: Since the "first additional current-conducting element" is actually the “first current-conducting element”, examiner requests for Applicant to replace “first additional current-conducting element” with “first current-conducting element”. Appropriate correction is required.

3. Claims 35 and 69 are objected to because of the following informalities: In lines 7 and 10 of claim 35, Applicant recites the limitation “the corrective element”. This limitation lacks proper antecedent basis. For examination purposes, examiner interprets the limitation as “the first corrective element”. Claim 69 is objected to for the same reasons. Appropriate correction is required.

4. Claim 35 is objected to because of the following informalities: Examiner requests for Applicant to provide “Specific Absorption Rate” before the first instance of the limitation “SAR" in the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. Claims 35-67 and 69 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear to the examiner what the applicant is trying to claim by the amendments made on lines 6-8 of claim 35. Applicant added the limitation "wherein the first corrective element comprises current conducting tracks for increasing current capacity in the corrective element relative to a total current level capacity directly from the circuit board". Paragraph [0034] discloses "Since the additional corrective element now features current-conductive tracks at the point at which the local current distribution of the total current I1(X) of the circuit board LP is less than IM1, the total current level can be increased there and, thereby, an evening out of the overall resulting total current can be achieved (compensation effect)". It understood by the examiner that the current corrective element is provided to disperse the total current level directly from the circuit board, thus, reducing SAR. For examination purposes, examiner interprets the limitation as "wherein the first corrective element comprises current conducting tracks for dispersing a total current level directly from the circuit board".

6. Claims 36-67 are rejected for depending on rejected independent claim 35.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 35-43, 46, 47, 50 and 52-67 and 69 are rejected under 35 U.S.C. 102(b) as being anticipated by Phillips et al. (US 6,421,016, hereafter '016).

Claim 35: '016 teaches a wireless communication device comprising:

at least one circuit board (col. 4/lines 31-36);

at least one antenna (Fig. 1, 102) coupled to the at least one circuit board (col. 3/lines 48-50, antenna is coupled to circuit board through transceiver circuitry) for at least one of emitting and receiving electromagnetic radio energy fields (col. 3/lines 52-53); and

at least one first current-conducting corrective element (Fig. 1, 104) coupled to the circuit board (col. 4/lines 31-36), wherein the first corrective element comprises current conducting tracks (path that current travels) for dispersing a total current level directly from the circuit board (col. 5/lines 42-49), and wherein the first corrective element is embodied such that at least one of an amplitude level and a phase angle of electrical currents on the antenna, the circuit board and the first corrective element, are adjusted in relation to each other to distribute the electrical currents in a substantially even manner (col. 4/lines 28-58, also, due to the laws of physics, specifically the laws of current, the currents on the antenna, the circuit board and the first corrective element will inherently adjust in relation to each other and distribute a substantially even manner), and to reduce a maximum SAR distribution (Abstract) which results overall as a result of electrical currents.

Claim 36: '016 teaches an additional tuning part (108) for tuning at least one of the phase angle and the amplitude level of the electrical current on at least one of the first corrective element and the circuit board (col. 4/lines 28-58, also, due to the laws of physics, specifically the laws of current), wherein an overlaid total current flow (204) resulting from the electrical

currents on the circuit board, the first corrective element and the antenna (col. 4/lines 28-58) has an overall effect of producing a substantially homogeneous SAR distribution (Fig. 2, 204) in one of a specifiable surface area (any select surface area of 108 where the SAR distribution is substantially homogeneous) viewed from a side of the circuit board facing the user (Fig. 2, left side of 108) and in a specifiable volume area (any select volume area of 108 where the SAR distribution is substantially homogeneous) around a coupling structure (108) of the circuit board and the antenna coupled thereto (col. 4/lines 53-58, 102 is coupled to 108 through 208).

Claim 37: '016 teaches at least a second, current-conducting correcting element (108) for additionally tuning the current flow on at least one of the first corrective element and the circuit board (col. 4/lines 28-58) such that a changed electrical current flow (206) on at least one of the first corrective element and the second corrective element is caused (col. 4/lines 28-58) which runs substantially out-of-phase to the current flow on the circuit board (Fig 2. illustrates the magnitude of 206 having a maximum at the top of 104 near antenna 102 and it also illustrates 204 having a minimum at the top of 108 near 102, thus being substantially out-of-phase), wherein, (the remainder limitations of claim 37 are rejected for substantially the same reasons as claim 36, as discussed above) as a result of the overlaid total current flow on the circuit board, at least one of the first corrective element and the second corrective element and the antenna taken together, a substantially homogeneous SAR distribution over one of an overall area of a side of the circuit board facing the user and in a specifiable volume area around a coupling structure of the circuit board and the antenna coupled thereto results.

Claim 38: '016 teaches the first corrective element is electrically connected to ground of the circuit board (col. 4/lines 31-36).

Claim 39: '016 teaches the first corrective element is at least one of coupled capacitively and coupled inductively to the circuit board (Fig. 1, since 104 and the circuit board are close to each other as shown in Fig. 1 there must be capacitive coupling between the two).

Claim 40: '016 teaches the second corrective element is electrically connected to at least one of the first corrective element and the circuit board (Fig. 2, 208; col. 4/lines 31-36).

Claim 41: '016 teaches the second corrective element is at least one of capactively coupled to the first corrective element (Fig. 1, since 104 and 108 are close to each other as shown in Fig. 1 there must be capacitive coupling between the two).

Claim 42: '016 teaches the second corrective element is an integral component of at least one of the first corrective element and the circuit board (Fig 2 illustrates 108 and circuit board as integrated components).

Claim 43: '016 teaches the second corrective element is provided separately from at least one of the first corrective element and the circuit board (Fig. 1 illustrates 104 and 108 separated from each other).

Claim 46: '016 teaches the second corrective element is embodied as one of a serpentine loop structure (col. 6/lines 64-67) and in a form of at least one flat element (fig. 1).

Claim 47: '016 teaches at least one of the first corrective element and the second corrective element is arranged at a specifiable height from the circuit board (Fig. 1 illustrates 104 at a specific height from the circuit board).

Claim 50: Claim 50 is rejected for substantially the same reasons as claim 47, as discussed above.

Claim 52: '016 teaches the second corrective element runs substantially orthogonally to a longitudinal extent of the first corrective element (Fig. 1 illustrates the bottom part of 108 opposite of antenna 102 running orthogonally to a longitudinal extent of 104).

Claim 53: '016 teaches the second corrective element is positioned and dimensioned in such a way relative to at least one of the circuit board, the antenna and the first corrective element that a minimum resulting SAR distribution is produced at around a resonance frequency in radio operation of the antenna (Abstract; col. 5/lines 14-22).

Claim 54: '016 teaches the second corrective element is dimensioned such that a component placement surface (surface of circuit board that '110' rests on) of the circuit board enclosed by it corresponds at most to 0.2 to 0.5 times a part of the circuit board surface enclosed by the first corrective element (fig. 1).

Claim 55: '016 teaches at least a third additional, current-conducting corrective element (serpentine portion, col. 6/lines 64-67) on the circuit board coupled and embodied as a tuning part such that for the electrical current generated on the circuit board, an explicit current path extension is effected (by adding the serpentine portion the current path inherently gets extended) while simultaneously substantially retaining original specified length and width dimensions of the circuit board (fig. 1).

Claim 56: '016 teaches the third corrective element is arranged in an area of an end face of the circuit board which lies opposite an end face of the circuit board having a connection area of the antenna (fig. 1).

Claim 57 is similar in scope as claim 55 and is therefore rejected for substantially the same reasons.

Claim 58: '016 teaches the third additional corrective element is assigned to a component placement surface of the circuit board (surface of circuit board that third corrective element rests on) which, when the wireless communication device is worn on the body of the user or when the wireless communication device is brought up to the head area of the user for speaking or listening is facing the respective body or head area (the third element will always be facing the respective body or head).

Claim 59: '016 teaches the third corrective element is arranged on a component side of the circuit board opposite the antenna (fig. 1).

Claim 60: '016 teaches the third additional corrective element is positioned such that its imaginary orthogonal projection in relation to a component placement surface of the circuit board substantially lies with a delimitation area spanned by side edges of the circuit board (fig. 1).

Claim 61: '016 teaches the third additional corrective element is positioned such that its imaginary orthogonal projection in relation to a component placement surface of the circuit board substantially lies with a delimitation area spanned by side edges of the circuit board (fig. 1).

Claim 62: '016 teaches the third corrective element is at least one of an electrically conductive material (Abstract).

Claim 63: '016 teaches the third corrective element is formed by a single layer covering (fig. 1).

Claim 64: '016 teaches at least one of the corrective elements is formed by at least one coating layer in at least one of a lower shell and a upper shell of a housing of the wireless communications device (fig. 1).

Claim 65: '016 teaches at least one of the corrective elements is manufactured in punch/bend technology (this limitation merely recites a method of forming a device. The method of forming a device is not germane to the issue of patentability of the device itself, therefore, these limitations have not been given patentable weight) and is arranged at a specifiable height above a component placement surface of the circuit board (fig. 1).

Claim 66: '016 teaches the circuit board is substantially embodied in a rectangular shape (Fig. 1).

Claim 67: '016 teaches the antenna is embodied as one of a $\Lambda/4$ antenna and a PIFA antenna (col. 7/lines 4-11) which together with the circuit board form a radiating dipole (the antenna and 108 are center fed by transceiver circuitry 110 which form a dipole antenna).

Claim 69: Claim 69 is rejected for substantially the same reasons as claim 35.

10. Claims 35, 37, 44, 45, 49 and 51 are rejected under 35 U.S.C. 102(b) as being anticipated by Perrotta et al. (US 6,246,374, hereafter '374).

Claim 35: '374 teaches a wireless communication device, comprising;

at least one circuit board (col. 3/line 8);

at least one antenna (Fig. 2, 16) coupled to the at least one circuit board (col. 2/lines 13-15; 16 is coupled to 18 which is then coupled to the circuit board, (col. 3/lines 40-43)) for at least one of emitting and receiving electromagnetic radio energy fields (col. 2/lines 17-20); and

at least one first current-conducting corrective element (Fig. 2, 18) coupled to the circuit board (col. 3/lines 40-43), wherein the first corrective element comprises current conducting tracks (path that current travels) for dispersing a total current level directly from the circuit board (col. 3/lines 3-8), and wherein the first corrective element is embodied such that at least one of an amplitude level and a phase angle of electrical currents on the antenna, the circuit board and the first corrective element are adjusted in relation to each other to distribute the electrical currents in a substantially even manner (due to the laws of physics, specifically the laws of current, the currents on the antenna, the circuit board and the first corrective element will inherently adjust in relation to each other and distribute a substantially even manner), and to reduce a maximum SAR distribution (col. 2/lines 37-53 teaches the radiator '18' radiates in a direction opposite the user, therefore, inherently reducing the SAR distribution upon the users head) which results overall as a result of electrical currents.

Claim 37: '374 teaches at least a second, current-conducting correcting element (54, fig. 5) for additionally tuning the current flow on at least one of the first corrective element and the circuit board such that a changed electrical current flow (current caused by addition of '54') on at least one of the first corrective element and the second corrective element is caused which runs substantially out-of-phase to the current flow on the circuit board (the addition of element '54' will cause to the total current of the device to be adjusted with respect to phase and amplitude, the phase being "substantially out-of-phase" to the current flow on the circuit board), wherein, as a result of the overlaid total current flow on the circuit board, at least one of the first corrective element and the second corrective element and the antenna taken together, a substantially homogeneous SAR distribution over one of an overall area of a side of the circuit board facing

the user and in a specifiable volume area around a coupling structure of the circuit board and the antenna coupled thereto results (the addition of element '54' will cause to the total current of the device to be adjusted, resulting in a reduced SAR, interpreted to be "substantially" homogeneous SAR distributions).

Claim 44: '374 teaches the first corrective element (184) is embodied as a loop (Fig. 4) which at least partly extends along side edges of the circuit board (Fig. 4).

Claim 45: '374 teaches the loop for the first corrective element is substantially embodied as a rectangle (Fig. 4).

Claim 49: '374 teaches the first and second corrective elements are substantially positioned in a same layer plane (fig. 5).

Claim 51: '374 teaches the second corrective element is formed by a metallic display window (col. 3/lines 49-54).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over '016.

Claim 48: '016 teaches all of the limitations of claim 47, as discussed above. '016 fails to teach the height is between 0.1 and 0.6 cm away from a component placement surface of the circuit board. However, it well known in the art of mobile communication terminals that it is

highly demanded to reduce the size of the terminal. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have reduced the height of the corrective elements of '016 between 0.1 and 0.6 cm, since it would have been desirable to reduce the size of the terminal at the time the invention was made.

Response to Arguments

13. Applicant's arguments with respect to claims 35-67 and 69 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT KARACSONY whose telephone number is (571)270-1268. The examiner can normally be reached on M-F 7:30 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas W. Owens can be reached on 571-272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. K./
Examiner, Art Unit 2821

/Hoang V Nguyen/
Primary Examiner, Art Unit 2821